"*outer side of each bundle* is a thin layer of cambium." On the same page the endogens are said to have "their cambium tissue in the center of each bundle." A difference of opinion might also be held in reference to the statements on page 87, that "cross-fertilization secures variation," and self-fertilization represses it. We can cordially recommend the book, not only to the practical cultivator, but also to botanists, many of whom know far too little of the principles of physiological botany.

On the Structure of the Testa of Several Leguminous Seeds. By L. H. Pammel. Extracted from the Bullitin of the Torrey Botanical Club. Vol. xiii (1886), pp. 17–24, t. 2.

In this brochure, Mr. Pammel describes the structure of the seed coats of Phaseolus vulgaris, Gymnocladus Canadensis, Physostigma venenosum and Mucuna urens. The structure of the very hard seed-coats he finds quite homologous with that of less resistant ones, differing chiefly in the greater development of sclerenchyma cells which are commonly present. The work has been carefully done, and much of the extensive literature regarding leguminous seed-coats is cited by the author.

NOTES AND NEWS.

THE GERMAN imperial government has ordered the establishment of chairs of bacteriology at all universities of the empire.

THE PAPER of Dr. W. Pfeffer on intramolecular respiration, noticed in the March GAZETTE, is taken, as we are informed by Dr. N. L. Britton, from *Untersuchungen des botanischen Instituts in Tübingen*, vol. i.

THE ENUMERATION of the species of the genus Phyllosticta by George Martin is terminated in the March number of the *Journal of Mycology*. It includes seventy species, found upon sixty-four species of host plants.

EXTENSIVE BACTERIOLOGICAL studies are now carried on at the U. S. Army and Medical Museum at Washington. The most recent apparatus and methods are used, and the facilities are considered quite equal to those of German laboratories.

THE FOLLOWING new grasses are described by Dr. Geo. Vasey in the *Bulletin of the Torrey Club* for February: Panicum Nealleyi, Imperata brevifolia, Aristida Arizonica, A. Harvardii, and A. Orcuttiana. Seven new varieties belongingto other species are also described.

EDOUARD MORREN, the well-known professor of botany in the University of Liége, vice-president of the Royal Botanical Society of Belgium, editor of *Belgique Horticole* and of *Correspondance Botanique*, died on the 28th of February last, at the age of 52 years.

IN ANSWER to an enquiry, Professor Gray informs us that he is not quite disposed to place on sale copies of his papers in the American Academy's Proceedings and elsewhere, especially as he pretty freely presents them to his principal correspondents, so that there are not very many left over. Still, to oblige those whom he has to overlook or can not keep the run of, and to recover a portion of the cost, he has arranged that orders for them addressed to the curator of the Herbarium of Harvard University will as far as possible be filled, at the rate of thirty-five cents for each paper.

W. C. WALKER, F. R. M. S., of Utica, and H. H. Chase, M. D., of Geneva, N. Y.. have issued a fascicle of eight quarto pages and two plates dealing with some new and rare diatoms. Twenty-two species are mentioned, all of which are figured. Of the forms marked as new five species are by Mr. Walker, two species and two varieties by Dr. Chase, two species by Prof. H. L. Smith, one species by Mr. E. S. Nott, and one variety by Mr. B. W. Thomas. The plates are photographs from free-hand drawings by Mr. Walker, and are fine examples of this kind of work. We suppose it is by a slip that the figures are said to be magnified 400 diameters, for being free-hand they must necessarily be variable. We are informed that this is to be followed by other numbers.

IN AN ARTICLE on horticultural botany read before the Western N. Y. Horticultural Society, of which extra copies have been distributed, Dr. E. L. Sturtevant suggests the words *pomiculture* and *olericulture* to embrace respectively fruit culture and vegetable culture. It is pointed out that the latter deals with plants which have a pedigree, being mostly raised each year from seed, while the former deals with plants without a pedigree, but with only a parentage, being mostly propagated by division. The one class of plants reproduces the various forms from seed with much certainty, which are properly called varieties, the other not being able to reproduce them with any certainty should not have the forms called varieties, but variations. Whenever a valuable variation occurs it is propagated indefinitely by division; should it also be capable of reproduction by seed, it becomes a true variety.

THE FIRST NUMBER of a new quarterly journal devoted to algæ, called *Notarisia*, has just appeared. It proposes to treat of the current bibliography of this branch of botanical science, to collate references and Latin descriptions of new species, to furnish communication between algologists, and to some extent to publish original articles. The journal is designed to be truly international; communications will be published in Italian, French, or Latin. The price will vary according to the required size, but will not exceed fifteen francs ($3.00) per annum. Subscriptions should be sent to the editors, Dr. G. B. de Toni and David Levi, S. Samuele 3422, Venice, Italy. The present number consists of sixty-four octavo pages with heliotype portrait of De Notaris, to whom the journal is dedicated. It also has an appendix of eight pages with two plates illustrating the genera of Florideæ. There is no doubt about the need of such a journal, and this gives promise of meeting the want.

OPPORTUNITY is again offered to any who desire, to obtain the whole or any part of the *Flora Danica*. This magnificent work was commenced in the latter part of the last century, and has been published by the liberality of the king of Denmark. It is now complete, excepting the index, and it is proposed to reprint such parts as may be called for The entire work contains explanatory text and over *three thousand* plates representing 4000 species belonging to Denmark, Norway and Sweden, Iceland and Greenland. Single fascicles consisting of 60 plates with text can be had for 19 fr. 50 c., or, colored, for 55 fr. 50 c. Considerable discount will be made when 10 or more fascicles are ordered. The editor also proposes to issue from the same plates the following works: 1. *Icones Floræ Groenlandicæ* consisting of 330 plates with text, price, uncolored, 65 fr. 50 c. or, colored, 250 fr. 25 c.—2. *Arboretum Scandinavicum*, illustrations of the trees and shrubs of Denmark, Norway and Sweden, 160 plates, uncolored 40 fr., colored, 126 fr.—3. *Icones plantarum officinalium Scandinaviæ*, 300 plates, uncolored 60 fr., colored, 240 fr. Those who wish to obtain any of these works or the whole or part of the *Flora Danica* should communicate their wishes to the editor Dr. Joh. Lange, Thorvaldsens Vej 5 (V.) or to MM. Lehmann & Stage, Klareboderne 3, Copenhagen K. The *Flora Groenlandica* will be especially valuable to North American botanists.

WE LEARN FROM the *Bulletin de la Société de France* that S. Groslik has been carrying on experiments to determine the influence of light upon the development of the leaf-parenchyma. He selected for the purpose the leaves of Eucalyptus globulus which exhibit three distinct stages of development. The parenchyma of the very young leaf consists only of isodiametric cells, which the author designates as "primitive mesophyll." In the second stage the leaf is vertical and develops a layer of palisade parenchyma under both surfaces. In the third stage the leaf is horizontal and has a layer of palisade parenchyma as usual only under the upper surface, the palisade of the under side having gradually been transformed into spongy parenchyma. M. Groslik holds that these changes are induced by the change in the illumination and gives the following experiments to demonstrate this: Taking a leaf in the first phase of development, he kept it in a horizontal position when it developed palisade only on the upper face. Keeping a leaf in the second stage (i. e., one having palisade on both surfaces) in a constantly vertical position the inferior palisade did not become converted into spongy parenchyma. The author therefore argues that from the primitive mesophyll of the leaf either spongy or palisade parenchyma is developed and that the character of this adult mesophyll is dependent on the illumination, a strong direct illumination favoring the development of palisade and shade favoring the formation of spongy parenchyma. M. Groslik's conclusions are hardly new, but his experiments are interesting and can be used in laboratory demonstrations.